

throughout their length, while in the latter a great many of the longer hairs as well as many of the shorter ones taper almost to a point.

The description and measurements of structural parts are as follows:

ZONE OF HAIRS (300–500 μ in diameter).

Hairs: (*a*, *pl. XXVI*) long hairs consisting of 18–20 (more or less) cells outside the gelatinous sheath, counting from the basal cells; diameter of outer cells 5–8 μ , of inner 5–8 μ ; length of middle and outer (apical) cells 18–40 μ , of basal 13–20 μ ; shape of basal cells elliptical to oval, of outer mostly rectangular, of apical usually rounded at tip.

(*b*) Short hairs consisting of 1–6 cells outside the basal cells; diameter of basal cells 6–8 μ , of apical 4–6 μ (rarely wider than the basal); length of cells 13–16 μ ; shape of basal cells round to elliptical or oval; of the others rounded to rectangular (apical often pyriform).

Spores (*c*), single or in clusters, 10–15 μ in diameter, 15–26 μ long, spherical when young, pyriform when mature.

INTERNAL FILAMENTS.

Basal cells (*d*) 8–18 μ in diameter (broader in a few cases), 10–40 μ in length (rarely larger), oblong to ovoid, often very irregular.

Cells of longitudinal fibers (*e*) 3–15 μ in diameter, very variable and often indefinite in length, irregularly cylindrical and often tapering.

Cells of transverse fibers (*f*) 4–12 μ in diameter, much extended and variable in length, irregularly cylindrical.

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EXPLANATION OF PLATE XXVI.—The plate represents a longitudinal radial section of a branch a short distance from the base, reaching from the outer edge of hairs to the middle of the axis. $\times 450$. *a*, long hair; *b*, short hair; *c*, spore formed from a single end cell; *d*, basal cell; *e*, longitudinal fiber of central portion; *f*, transverse fiber of central portion.

NOTE ON CORN SMUT.

A FEW years ago the per cent. of smut on corn in the vicinity of Manhattan was investigated with considerable care.¹

The tables then presented, which included three years' observations, show that the average of all counts made in August gave 6.2 per cent. of smutted stalks. This year the amount of smut was greater, one field giving 90 smutted stalks in 840, or 10.7 per cent. Another,

¹A. S. HITCHCOCK and J. B. S. NORTON, Bulletin 62, Kansas Experiment Station, December 1896.

250 smutted stalks in 1250, or 20 per cent. These observations were made in order to compare the results with those obtained from the third field, where 140 stalks showed 38 to be smutted, or 27 per cent. This field was an experimental plat in which a number of crossed varieties were being self-pollinated. The tassels to be used for this purpose were enclosed in sacks, but the remainder were pulled out when young. At the time the pollinating was begun, several ears were beginning to silk. These were cut off with a corn knife. In some cases the entire ear was cut off; in others it was cut above the base. After a period the ears were allowed to grow as they appeared. In this last plat 117 stalks had ears upon them of which 10 had been cut. Of the 10 cut ears 9 were smutted, or 90 per cent.; of the 107 uncut ears 5 were smutted, or 4.7 per cent. The cut ears were growing at the time of mutilation. These observations serve to show that corn smut is greatly increased by mutilation which exposes the growing issue.—A. S. HITCHCOCK, *Manhattan, Kan.*

A BOTANICAL ART GALLERY

DURING the past season the University of Minnesota has taken steps to found a photographic exhibit of the vegetation of the state, and several hundred dollars have been expended for experimental work. The results are so far gratifying that the writer feels justified in giving the outlines of the plan for the benefit of other institutions that may care to develop similar exhibits.

Considerable time was spent during the summer in securing negatives of vegetation. A photographer has been continuously employed, and about 300 8×10 negatives have been obtained. For the present the efforts have been limited to (a) plant portraits in their habitats and (b) ecologic groups. Many of these have been enlarged and framed. A commodious and well-lighted room has been chosen for the hanging, and at present twenty enlargements, 30×40 , and several of smaller size, have been hung as the nucleus of the gallery. The pictures are numbered and framed in the ordinary manner, and promise to have much educational value, not only to undergraduates, but to the public generally.

I find that a picture 30×40 can be produced, properly framed and hung, at a minimum expense of about \$17. Higher prices are, however, demanded for the best work in framing. It is important to